Space Weather Forecast

Issued on Saturday, 26 March 2022 at 12:08 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of G1/Minor Storm intervals days 1-3, including potential CME arrival.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Very Low with the largest Background flare from the largest spot group located in the northeast. This group along with a smaller group to its west form a wider sunspot complex in the northeast quadrant, but have become largely stable through the last 24 hours. A much smaller uni-polar (which produced the M1 flare on 25th) is located in the southeast quadrant, but has been inactive.

No Earth directed CMEs (coronal mass ejections) have been observed.

Solar Wind / Geomagnetic Activity: The solar wind slowly declined to near 400km/s. The magnetic field carried the wind was weak, and whilst the north-south component (Bz) was often in the southward direction, this was also weak. Consequently geomagnetic activity has remained Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low to Very Low, but with a slight chance (10%) of further isolated M-flares possible.

Solar Wind / Geomagnetic Activity: The 25th March CME arrival is expected 27/2300 +/- 10 hours, likely with a glancing impact, although some uncertainty. Otherwise faster solar wind from a coronal hole is expected to enhance solar winds across Earth later day 1 (26th), and through day 2 (27th), with solar winds then likely remaining enhanced into day 3 (28th) due to the anticipated CME. Solar winds easing again day 4 (29th). Quiet, isolated Unsettled geomagnetic activity will become Active with a chance of G1/Minor Storm intervals from the arrival of CH69 later day 1 (26th) and into day 2 (27th), and then again later day 2 and into day 3 (28th) from CME arrival. Activity likely easing to Quiet to Unsettled day 4 (29th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	40	40	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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